



## ROLS

### Remote Optical Laser Sensor

#### SAFEGUARDS AND PRECAUTIONS:



#### Diode Laser

Max. output power: < 1 milliwatt  
 Wavelength: 650 nanometers (visible light)  
 Min. divergence: 0.5 milliradian  
 Output: Continuous (CW)  
 Laser hazard classification: Class 2

#### Manufacturer:

Monarch Instrument  
 15 Columbia Drive  
 Amherst, NH 03031 USA  
 Country of Origin: USA  
 Contact info: www.monarchinstrument.com

#### Laser hazards

- **Eye injury from beam** - Do not look into the direct or reflected beam; can cause eye injury up to 25 ft (7.5 m) away.
- **Visual interference (glare) with pilots and drivers** - Interferes with vision up to 525 ft (160 m) away. Can be a distraction up to 1 mile (1.6 km) away. **NEVER point any laser towards aircraft or vehicles; it is unsafe and illegal.**

#### Safe use guidance

Class 2 lasers are considered safe for accidental eye exposure. Do not look or stare into beam. Do not aim at aircraft. **This is not a toy.** Always supervise children.



**Read and follow all instructions in this instruction sheet carefully and retain this sheet for future reference.**

**Do not use this instrument in any manner inconsistent with these operating instructions or under any conditions that exceed the environmental specifications stated.**

**This instrument is not user serviceable. For technical assistance, contact the sales organization from which you purchased the product.**

#### DESCRIPTION:

The Remote Optical Laser Sensor has a visible red laser light source and green LED on-target indicator. The class 2 laser source acts as the aiming device during setup and can accurately measure speeds from 1-250,000 RPM from a distance of up to 25 feet with a maximum offset angle of 60 degrees from the rotating object. The sensor is housed in a threaded 303 stainless steel tube and supplied with a 90-degree mounting bracket, jam nuts and an eight foot shielded cable. **ROLS-P** comes with a 3.5mm (1/8") male stereo plug adapter. **ROLS-W** comes with 4 tinned wires.

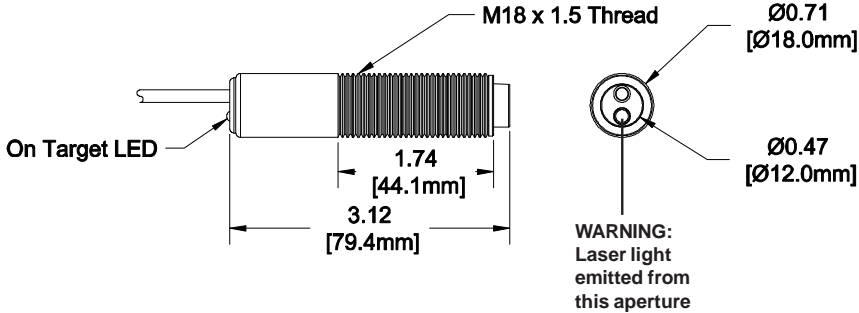


#### SPECIFICATIONS:

**Speed Range:** 1-250,000 RPM  
**Illumination:** Visible Red Laser, Class 2  
**Laser Specifications:** **Classification:** Class 2 (per IEC 60825-1:2014)  
 This product complies with IEC60825-1 Ed. 3 and 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50 of June 2007.  
**Maximum Laser Output:** 1mW  
**Pulse Duration:** Continuous  
**Laser Wavelength:** 650 nm  
**Beam Divergence:** <1.5 mrad  
**Beam Diameter:** 4 x 7 mm typical at 2 meters  
**Laser Diode Life:** 8,000 operating hours MTBF (1 year warranty)  
**On-Target Indicator:** Green LED on wire end cap  
**Operating Range:** up to 25 feet [7.6 m] and 60 degrees offset from target  
**Power Requirement:** 3.3 – 15 Vdc, 0.4W max  
**Output:** Open Collector with internal pull up resistor to supply voltage  
 Positive pulse when target present – Output Voltage=Supply Voltage  
 Optional – TTL pulse, Negative pulse (Contact factory)

**SPECIFICATIONS** (continued):

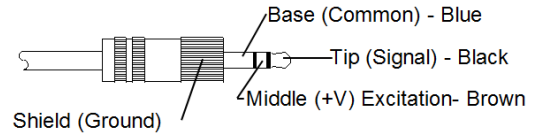
**Operating Temp.:** 14 °F to 158° F [-10 °C to 70° C]  
**Humidity:** Maximum relative humidity 80% for temperature up to 88 °F [31 °C] decreasing linearly to 50% relative humidity at 104 °F [40 °C]  
**Connection:** ROLS-P: 3.5 mm [1/8 inch] male stereo plug  
 ROLS-W: Tinned wires  
**Cable Length:** 8 feet [2.4 m]  
**Material:** 303 Stainless Steel supplied with two M18 Jam Nuts and Mounting Bracket  
**Lens:** Acrylic Plastic  
**Dimensions:** Threaded Tube 3.12 in x 0.71 in diameter [M18 x 1.5 x 79.4 mm] long



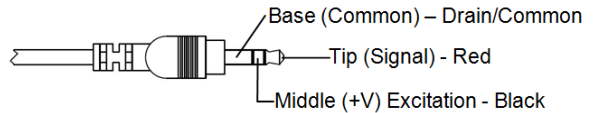
**CONNECTION DETAIL for ROLS-W:**

Wire Color	Function	
Brown	Positive Power Supply	(3.3 to 15 Vdc)
Blue	Common	(Com)
Black	Signal (+V to 0 Vdc Pulse)	(Sig)
Shield	Housing Ground	(Gnd)

**CONNECTION DETAIL for Metal Plug:**



**CONNECTION DETAIL for Molded Plug:**



**OPERATING INSTRUCTIONS:**

The ROLS Remote Optical Laser Sensor is capable of detecting a reflected pulse from a target consisting of T-5 Reflective Tape or high contrast color differences (such as black and white) at distances up to 25 feet [7.6 m] from the rotating object and angles up to 60 degrees. For most applications, a 1/2" [12 mm] square piece of Reflective Tape (T-5) should be applied to a clean area on the rotating object. At slow speeds (<500 RPM) best results will be obtained by aiming the laser perpendicular (90°) to the target using a narrow piece of reflective tape – typically 0.2 inch (5 mm) wide.

The ROLS should be mounted (using the supplied jam nuts and aluminum mounting bracket) and optically aligned to illuminate the on-target indicator once per revolution. It is recommended that the optical sensor be placed at a slight angle (15 degrees) from perpendicular, so that the sensor will receive only pulses from the reflective marker. Triggering from contrasting colors should be done perpendicular to the target. The ROLS should be at least 1 inch from the reflective target to avoid false triggering. The green LED On-Target Indicator will blink at the input frequency rate when the ROLS is properly aimed. **NOTE:** The green LED On-Target Indicator will blink on and off at slow speeds and remain on steady at high speeds.

The ROLS is supplied with a 3.5 mm [1/8 inch] male stereo plug (ROLS-P) or an 8 foot [2.4 m] cable terminated with 4 tinned wires (ROLS-W). The plug may be cut from the cable and the leads stripped and connected as shown in connection detail for tinned wires above. An optional 25 foot [7.6 m] extension cable EC-25P is available with a female socket for the plug on one end and a 3.5 mm [1/8 inch] male stereo plug on the other (for ROLS-P).

The ROLS-P will work directly with all Monarch handheld tachometers and stroboscopes that accept pulse input through an input jack (e.g. PLT200, PLS, dax, dbx, DBL, pbx, PBL, Nova-Pro 300, Nova-Pro 500). The ROLS-W will work with all Monarch panel instruments that accept pulse inputs (e.g. ACT Series, Frequency to Analog Converters, DataChart 1250, DataChart 6000) and vibration data collectors. A sensor power supply (SPSR-IM) with BNC output is available for those applications that require a separate power source for the sensor (ROLS-P only).

**ACCESSORIES:**

SPSR-IM	Self Powered Sensor – Interface Module	ROLS-NUT	Set of two M18 Jam Nuts
EC-25P	25 foot [7.6 m] Extension Cable for ROLS-P	ROLS-MNT	90° Slotted Mounting Bracket
T-5	Reflective Tape - 5 foot [1.5 m] roll	PLUG	3.5 mm [1/8 inch] male stereo plug
T-5WP	Waterproof Reflective Tape - 5 foot [1.5 m] roll	WIRE	3-wire shielded Sensor Cable, bulk lengths



**In order to comply with EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE):**

This product may contain material which could be hazardous to human health and the environment. DO NOT DISPOSE of this product as unsorted municipal waste. This product needs to be RECYCLED in accordance with local regulations, contact your local authorities for more information. This product may be returnable to your distributor for recycling - contact the distributor for details.

CE Compliant. RoHS Compliant. Meets the safety requirements of IEC61010-1 and IEC60825-1. This product is not waterproof.

Monarch Instrument's Limited Warranty applies. See [www.monarchinstrument.com](http://www.monarchinstrument.com) for details.

Warranty Registration and Extended Warranty coverage available online at [www.monarchinstrument.com](http://www.monarchinstrument.com).